

REMARKS

The present amendment is submitted prior to the issuance of a first Office Acton and simultaneously with the filing of the present application.

With this amendment applicants have amended the specification, cancelled claims 1 to 17 and added new claims 18 to 37, all in an effort to place the application in better condition for examination.

Favorable action on the present application is respectfully requested.

Any additional fees or charges required at this time in connection with the application may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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Page 1, starting at line 10:

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From EP 0 691 013 B1, the content of disclosure of which is included in the present application by reference, an electronic deduction system is known by means of which utilization charges can be collected from vehicles which move through a predetermined geographic zone or a chargeable road distance (utilization charges = toll). The known system provides that in each motor vehicle, a toll apparatus is installed which has a receiver for the signals of a navigation satellite system such as, e.g., GPS (Global Positioning System) or Glosnar and is provided with an electronic memory in which the chargeable road distances and the geographic zones (in the text which follows, only chargeable roads or road distances are mentioned, to simplify matters) and the respectively associated utilization tariffs are listed. Using the signals of the navigation satellite system, the toll apparatus has access to the current geographic position of the vehicle at any time and recognizes from the stored data concerning the chargeable road distances whether the motor vehicle is on a chargeable road distance or not and can automatically determine the toll amounts which may be due in this manner. To ensure completely anonymous deduction of the toll amounts, the known system provides for the use of debit cards (e.g. chip card) on which the respectively due toll amounts are deducted by the toll apparatus.

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From EP 0 701 722 B1, a toll apparatus is known which exhibits for this purpose a device for self monitoring for unauthorized manipulations at the individual components of the toll apparatus and an error memory for recording diagnostic data in the case of an unauthorized manipulation. If an unauthorized manipulation occurs, the toll apparatus can

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send out a signal indicating the improper operation of the apparatus via a corresponding signal device.

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It is, therefore, the object of the present invention to provide a roadside control device for checking the correct operation of a toll apparatus for satellite-supported electronic toll deduction which, on the one hand, ensures a high success rate during the checks to be performed but, on the other hand, requires the least possible expenditure for the apparatus technology and the operation of the control device.

Page 4, starting at line 1:

According to the invention, the control device has at least the following facilities:

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- a) a communication device for the wireless exchange of information between the control device and the toll apparatus in the passing vehicle,
 - b) a classification device for allocating the passing vehicle to a predetermined vehicle class,
 - c) a trigger device for the accurately timed activation of the devices of the control device,
 - d) an evaluating device for a plausibility check of the data supplied by the communication device and the classification device from and on the passing vehicle (or its toll apparatus, respectively), and
 - e) a recording device for recording the license plate of the passing vehicle in the case of an unsuccessful exchange of information of the communication device with the toll

device of the passing vehicle or in the case of a negative result of the plausibility check of the evaluating device.

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In particular, such information contains details on the vehicle class used as a basis for the charge deduction and on the proper booking of the toll amounts, for instance on a debit card or alternatively via the correct transmission of the toll amounts to a charge deduction center. The communication device is preferably constructed as a dedicated short-range communication (DSRC) device for the frequency range from 2.4 to 5.8 GHz. It can also be appropriate to use a terminal for a cellular network (CN) or a data radio network as the communication device. Such a terminal is of advantage especially if it is suitable for digital mobile radio and corresponds, e.g., to the GSM standard. A terminal for the Mobitex system can also be advantageously used. In principle, it is also possible to use a communication device in which the information is transmitted via infrared or ultrasonic signals. However, optical transmission methods are less preferred due to their sensitivity to physical obstructions on the transmission path. It is also recommended to conduct the dialog between the control device and the toll apparatus of the respective motor vehicle in encrypted form. For this purpose, corresponding encryption and decryption components must be provided in the control device and in the motor vehicle or, respectively, the toll apparatus of the motor vehicle. This distinctly increases the security against manipulation. In the vehicle, the keys necessary for encryption can be stored, for example, in a chip card or a fixed memory of the toll apparatus or of the communication device used in the motor vehicle. A particularly effective protection against manipulation can also be guaranteed if, apart from the current charge and chip card

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Control information, satellite, position and/or other apparatus information is interrogated and transmitted to the control device. If the roadside control device is equipped with a receiver for the signals of the navigation satellite system used, in a corresponding manner to the vehicle-mounted toll apparatus, the satellite signals currently received at the vehicle can be compared, for example, with the satellite signals currently received by the roadside control device. In this manner, confusions with other vehicles which are passing the roadside control device at the same time or very closely in time, and data manipulation can be virtually eliminated. This correspondingly also applies if the passing vehicle provides direct information on its current position at the time of the dialog.

Page 12, starting at line 12:

Figure 1 shows a block diagram of a control device according to the invention;

and

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A₂ The control device 1 shown in the form of function blocks in Figure 1 exhibits a communication device 2 which, for example, is constructed as a dedicated short-range communication device for a frequency in the region of 5.8 GHz. The control device 1 also comprises a classification device 3, the sensor system of which contains an electronic image sensor (e.g. in the form of an electronic camera). The control device 1 also has a trigger device 4 which is connected to the communication device 2 and the classification device 3 for signals. In addition, an evaluating device 5 and a recording device 7 are connected for signals to the trigger device 4. The evaluating device 5 consists, e.g., of an electronic computer which

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- a) a communication device,
- b) a classification device,

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- c) a trigger device,
- d) an evaluating device, and
- e) a recording device.

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